QuickSpecs

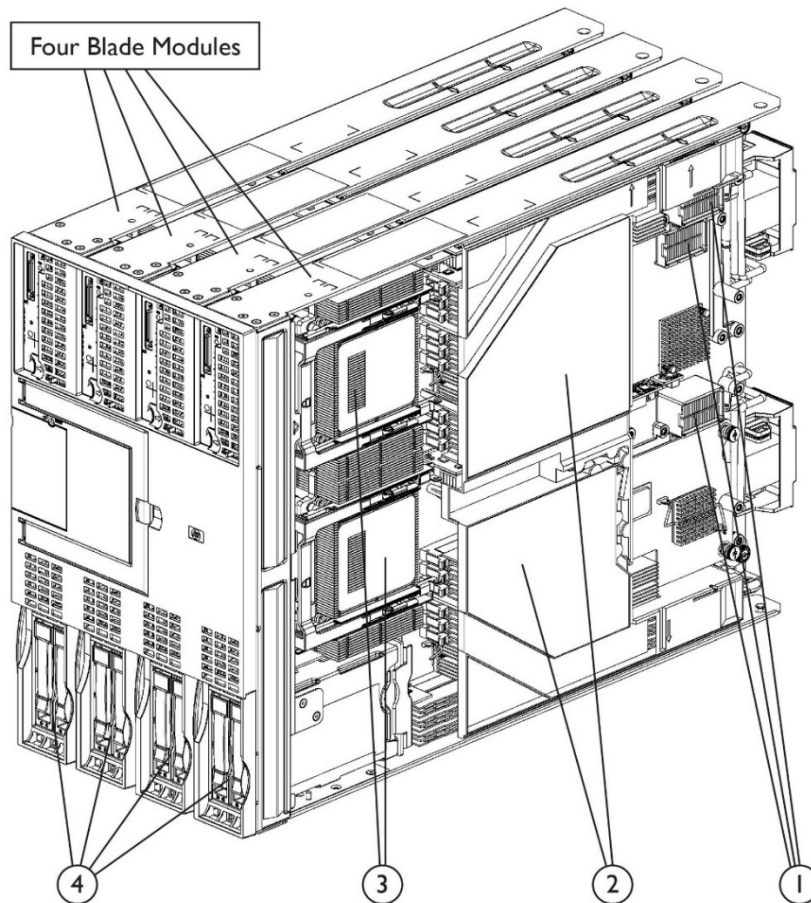## Overview

HPE Integrity BL890c i6 Server Blade

HPE Integrity BL890c i6 Server Blade

1. 12 x PCIe mezzanine slots (per BL890c i6)

2. 96 x DDR3 DIMM slots (per BL890c i6)

3. 8 x Intel® Itanium® processor 9700 series sockets(per BL890c i6)

4. 8 x SFF SAS HDDs, hot-swap bays (per BL890c i6)

What's New

- Intel® Itanium® processor 9700 series 8-core and 4-core processors
- Higher Frequency and Low Voltage PC3L-12800 Registered CAS 11 Memory DIMMs
- Supports the HP-UX 11iv3 2018 OEUR which has significant enhancements in data management (Veritas 6.1 default installed), Virtualization (un-capped vPars warning), high availability (Serviceguard SMS certified with Oracle RAC 12cR2), Java and Open Source (CIFS, BIND, Apache, PHP updates), Security (deactivate online CPU migration in SRP containers) and, manageability (HP-UX in private cloud environments through HPE Helion OpenStack)
- Support for newer networking and storage solutions, such as the HPE 10GbE Pass-Thru Module II, 3PAR 9450, MSA 2050 and MSA 2052, 12Gb/s SAS and Pure Storage FlashArray//M™
- Supports the latest HPE Storage arrays – XP7 and 3PAR 8000/2000 All Flash Storage to significantly boost performance and lower TCO

Hewlett Packard Enterprise

Overview

- HPE nPartitions (nPars) for BL8x0c i6 servers, for optimal allocation of resources to manage total cost of ownership and improved mission critical resiliency
- VSI OpenVMS V8.4-2L1 supports BL890c i6 servers. It includes a new release of OpenSSL and Secure Web Server (SWS) for OpenVMS based on Apache HTTP Server Version 2.4-12

At A Glance

This document covers the HPE Integrity BL890c i6 server blade only. For more information on HPE BladeSystem c-Class Enclosure and HPE BladeSystem c-Class Interconnect and Mezzanine Components, please see the following QuickSpecs:
- HPE BladeSystem c3000 Enclosure QuickSpecs:
  https://h20195.www2.hpe.com/v2/GetDocument.aspx?docname=c04123379
- HPE BladeSystem c7000 Enclosure QuickSpecs:
  https://h20195.www2.hpe.com/v2/GetDocument.aspx?docname=c04229580
- HPE BladeSystem c-Class Interconnect and Mezzanine Components
- HPE Virtual Connect
  https://www.hpe.com/us/en/integrated-systems/virtual-connect.html
- HPE Server Interconnects
  https://www.hpe.com/us/en/product-catalog/servers/server-interconnects.hits-12.html
- HPE Server Adapters
  https://www.hpe.com/us/en/product-catalog/servers/server-adapters.hits-12.html

The HPE Integrity BL890c i6 delivers the performance, reliability, and availability on HPE's 64-bit operating system HP-UX 11i v3 for the ultimate in scalability and flexibility in deployment. To further enrich your cost-efficient, consolidated Integrity blade infrastructure, Virtual Server OE (VSE-OE) can help with solution components such as HP-UX Virtual Partitions (vPars) v6.4, HPE Integrity Virtual Machines (Integrity VM), HPE Capacity Advisor, HPE Global Workload Manager, and automation through Hewlett Packard Enterprise infrastructure Orchestration. Additionally, High Availability OE (HA-OE) provides high availability via the HPE Serviceguard clustering technology and Data Center OE (DC-OE) brings the best of the virtualization capabilities along with high availability together in one integrated OE.

HPE Integrity BL890c i6 server blade includes:
- **Processor**:
  - Up to eight Intel® Itanium® 9700 Series processors

- **Memory**:
  - Up to 1.5 TB of memory. Supporting (96) DDR3 registered memory modules (R-DIMMs)

- **Storage Controller**:
  - Four (4) Embedded HPE Smart Array p410i SAS Controllers
  - RAID 1 and RAID 0, and HBA mode configuration options
  - Four (4) Embedded SAS read only 512MB cache, one per embedded HPE Smart Array p410i SAS controller

- **Internal Drive Support**:
  - Supports up to (8) eight small form factor (SFF) SAS hot plug hard drives

- **Network Controller**:
  - Sixteen (16) integrated HPE NC553i 10Gb FlexFabric adapter ports supporting 10Gb/1Gb autosensing Ethernet, FCoE, Flex-10, and TCP/IP offload engine
    Notes:
    - FlexFabric capability requires OS drivers and the use of an HPE Virtual Connect FlexFabric module.
    - BL8x0c i6 server blades require Virtual Connect 3.70 or later when used in Virtual Connect configurations

Overview

- **Mezzanine Support**:
  - Twelve (12) additional I/O expansion slots via mezzanine cards.
  - Supports up to (12) mezzanine cards
    - HPE NC553m Dual Port 10Gb FlexFabric Adapter
      Notes: A maximum of 8 HPE BLc NC553m Dual Port 10Gb Adapters are supported with BL890c i6
    - HPE Emulex LPe1205 8Gb FC BL-c HBA (2-port 8Gb Emulex FC HBA)
    - HPE QMH 2562 8Gb FC BL-c HBA (2-port 8Gb QLogic FC HBA)
    - HPE Smart Array P711m/1G FBWC 6G SAS Controller
    - HPE Smart Array P700m/512 Controller

- **USB Support**:
  - Four (4) Internal USB ports on the BL890c i6
  - Two (2) External USB ports on the BL890c i6 via SUV cable

- **Management**:
  - HPE Integrity Server Blades Management Software
    - Integrity Integrated Lights-Out 3 (iLO 3) management processor
    - HPE Insight Control
    - HPE System Management Homepage
    - HP-UX 11i Management Software for Integrity Blades, **http://www.hpe.com/servers/integrityblades**
      - HPE Ignite-UX
      - HP-UX Software Assistant (SWA)
      - HPE Dynamic Root Disk (DRD)
  - HPE BladeSystem Infrastructure Management Software:
    - HPE BladeSystem c-Class Onboard Administrator
    - HPE BladeSystem c-Class Virtual Connect
  - Enterprise Management Software
    - Data Protector Software
    - GlancePlus Pak
    - Performance Manager and Agent
  - HPE nPartitions (nPars) for BL8x0c i6 servers:
    - Provide improved scalability, availability, and fault isolation, and a rich set of virtualization options for the BL890c i6. nPartions are seamlessly integrated into the converged infrastructure environment, including Virtual Connect and HPE Insight management tools, such as HPE SIM. System administrators will find nPartitions configuration management quick and easy to use
    - Provide electrically isolated hard partitions at the hardware level
      - Support for up to four (4) nPartitions per BL890c i6
      - Reconfigure partitions simply and quickly via iLO GUI
        - Scale up to one (1) 8-socket nPartition or
        - Scale out to two (2) 4-socket nPartitions
        - Scale out to four (4) 2-socket nPartitions
        - Reboot required when re-configuring
        - Fault isolation cannot be serviced independently
    - Each nPartition is managed just like a similarly sized server
      - Two (2) socket nPartitions are managed like a BL860c i6
      - Four (4) socket nPartitions are managed like a BL870c i6
      - Eight (8) socket nPartitions are managed like a BL890c i6
      - The Onboard Administrator provides access to each nPartion
      - Other management tools, like HPE SIM, Virtual Connect, and HPE SUM display data for each nPartition as if it were an individual server

Overview

- o Each nPartition in a BL890c i6 can be further partitioned through software virtualization tools:
  - HP-UX Virtual Partitions (vPars)
  - Integrity Virtual Machines (Integrity VM)
    - Up to 256 HPE Virtual Machines per nPartition
  - HP-UX Containers

- **Virtualization with HPE Matrix OE for HPE Integrity servers**, **http://www.hpe.com/info/matrixoe**
  - Advanced Infrastructure Management
    - o HPE Capacity Advisor (which includes HPE Virtualization Manager)
    - o HPE Virtualization Manager
    - o HPE Global Workload Manager and HP-UX Workload Manager
    - o HPE Matrix OE infrastructure orchestration
    - o HPE Systems Insight Manager
  - Virtualization Continuum
    - o HP-UX Virtual Partitions (vPars) v6.1
    - o HPE Integrity Virtual Machines (with HP-UX Guest OS's)
    - o HPE Process Resource Manager/pSets
    - o HP-UX Containers
  - Continuous availability
    - o HPE Serviceguard for HP-UX 11i
    - o HPE Serviceguard Extensions for SAP
    - o HPE Serviceguard Extensions for Oracle
    - o HPE Continentalclusters

- **Form Factor:**
  - HPE Integrity BL890c i6 server blade is a full-height, quadruple wide (occupies 4 slots) BladeSystem c-Class form factor. The BL890c i6 server blade plugs into the BladeSystem enclosure. In the c7000 enclosure, 2 server blades are supported per 10U enclosure. 4 enclosures can be configured to a standard 42U rack; 8 BL890c i6 server blades can be configured in a fully populated rack. In the c3000 enclosure, 1 BL890c i6 server blade is supported per 6U enclosure.

- **Enclosures**:
  - Hewlett Packard Enterprise offers two different c-Class server blade enclosures to meet your individual needs:
    - o The HPE BladeSystem c7000 rack enclosure is 10U high and holds up to 2 HPE Integrity BL890c i6 servers plugged vertically. Four (4) enclosures can be configured to a standard 42U rack
    - o The HPE BladeSystem c3000 rack enclosure is 6U high and holds 1 HPE Integrity BL890c i6 server plugged horizontally. Up to 7 enclosures can be configured to a standard 42U rack
    - o The HPE BladeSystem c3000 Enclosure targets three separate market segments:
      - Remote sites needing between 2 and 8 server blades
      - Mid-sized companies with between 3 and 100 servers in their company
      - Enterprise accounts with special datacenter requirement, such as DC power, or very limited rack power and cooling capacity.
  - Server blades, storage blades, and interconnect modules are all designed to fit into the c7000 and c3000 enclosures. For additional enclosure information, please see: **https://www.hpe.com/in/en/product-catalog/servers/bladesystem-enclosures.hits-12.html** .

- **Warranty**:
  - Protected by HPE Services and a worldwide network of Hewlett Packard Enterprise Authorized Channel Partners. Three-year parts, 3 Year Labor and 3 Year on-site limited global warranty. Certain restrictions and exclusions apply.

Overview

Models

HPE BL890c i6 Base Models

HPE Integrity BL890c c7000 Server Blade	AM380A
HPE Integrity BL890c c3000 Server Blade	AM381A

Processor(s)	Eight (8) processor sockets, processor modules are configured to order **Notes:** Supports up to eight (8) processors
Cache Memory	Included with processor **Notes:** All processor models
Memory	Ninety six (96) DIMM sockets; memory DIMMs are configured to order

Network Adapter	• Sixteen (16) integrated HPE NC553i 10Gb FlexFabric adapter ports supporting 10Gb/1Gb autosensing Ethernet, FCoE, Flex-10, and TCP/IP offload engine
	
	Notes:
	  — FlexFabric capability requires OS drivers and the use of an HPE Virtual Connect FlexFabric module.
	  — BL8x0c i6 server blades require Virtual Connect 3.70 or later when used in Virtual Connect configurations
	
	• One (1) additional 10/100 NIC dedicated to Integrity iLO 3 Management

Storage Controller	• Four (4) Embedded HPE Smart Array p410i SAS Controllers • Four (4) Embedded SAS read only 512MB cache, one per HPE Smart Array p410i SAS Controller
Hard Drives	Eight SFF SAS drive bays; hard disk drives are configured to order
IO expansion	Twelve (12) PCIe Mezzanine card slots (PCIe Gen2 x8 interface); mezzanine cards are configured to order
Optical Drive	None internal to blade server
Integrity iLO 3	Integrity iLO 3 and Integrity iLO 3 Advanced Pack license included
Form Factor	• Supports 1 BL890c i6 in HPE BladeSystem c3000 Enclosure • Supports up to 2 BL890c i6 in HPE BladeSystem c7000 Enclosure

Standard Features

Processor **Notes:** One of the following depending on Model	**Octo-Core Processors** • Intel® Itanium® 9760 2.66GHz/8-core/32MB/170W Processor • Intel® Itanium® 9740 2.13GHz/8-core/24MB/170W Processor **Quad-Core Processor** • Intel® Itanium® 9750 2.53GHz/4-core/32MB/170W Processor • Intel® Itanium® 9720 1.73GHz/4-core/20MB/130W Processor
Upgradeability	Upgradeable to eight (8) processors **Notes:** The HPE Integrity BL890c i6 supports 4, 5, 6, 7, or 8 processor configurations. Processors must be identical.
Cache Memory **Notes:** One of the following depending on Model	• Level 1 (L1) on core 32KB cache; 16KB Instruction/16KB Data • Level 2 (L2) on core cache; 512KB Instruction/256KB Data • Up to 32MB shared Last Level Cache (LLC) per processor, see processor specifics above Total 54MB on-die cache
All Processors support	• Single bit cache error correction • 50 bit physical addressing • 64 bit virtual addressing • Integrated memory controllers and Scalable Memory Interconnect (SMI) • Intel Instruction Replay Technology • Enhanced instructions-level parallelism • Enhanced Intel Hyper Threading, with Dual-Domain Multi-Threading support • Intel Cache Safe Technology • Residual error protection for floating point operations • Thermal logic technologies • Dynamic CKE, for additional power savings with memory DIMMs
Chipset	Intel Boxboro

Memory	**Type**	DDR3 registered memory modules (R-DIMMs)
	Minimum	32 GB (4 x 8 GB DIMMs)
	Maximum	1.5 TB (96 x 16 GB DIMMs)

Notes:
- Memory kits consist of two (2) DIMMs.
- Double Chip Spare is enabled in a pairs DIMMs.
- Memory must be loaded in quads (two memory kits, 4 DIMMs)
- Each hard partition (nPar) requires at least one (1) quad of memory DIMMs

Network Adapter	• Sixteen (16) Integrated HPE NC553i 10Gb FlexFabric adapter ports supporting 10Gb/1Gb autosensing Ethernet, FCoE, Flex-10 and TCP/IP offload engine
	Notes:
	  – FlexFabric capability requires OS drivers and the use of an HPE Virtual Connect FlexFabric module
	  – BL8x0c i6 server blades require Virtual Connect 3.70 or later when used in Virtual Connect configurations

Standard Features

Network Adapter	• One (1) additional 10/100 NIC dedicated to Integrity iLO 3 Management **Notes:** Up to thirty-two additional Gigabit Ethernet ports via the NC364m Quad-port mezzanine adapter, or sixteen additional 10 Gigabit Ethernet ports via the NC532m dual-port mezzanine adapter.
Expansion Slots	Twelve Mezzanine slots, eight (8) Type II and four (4) Type I, PCIe x8 Gen2
Integrated Manageability	• Integrity Integrated Lights-Out 3 (iLO 3) • Factory installed Integrity iLO 3 Advanced Pack License • HPE BladeSystem c-Class Onboard Administrator • HPE BladeSystem c-Class Virtual Connect
Storage Controller	Four (4) HPE Smart Array p410i 3Gb SAS Controller — 8 SAS Channels (one to each HDD) Supports RAID 1, RAID 0, and HBA mode options Four (4) Embedded SAS read only 512MB cache, one per HPE Smart Array p410i Embedded SAS Controller
Maximum Internal Storage	Hot Plug SAS 9.6TB SAS 8 x 1.2TB SAS
Graphics	Integrated ATI RN50 1280 x 1024 x 16M color (128 MB DDR memory) Resolution Color Depths Depths 1280 x 1024, 16.7M , 64k, 256,16 1024 x 768, 16.7M, 64k, 256, 16 800 x 600, 16.7M, 64k, 256, 16 640 x 480, 16.7M, 64k, 256, 16

FlexFabric Support	• Sixteen (16) ports via Eight (8) Embedded HPE NC553i 10Gb 2-port FlexFabric Converged Network Adapters integrated on system board.
	• Dual (2) ports via HPE BLc NC553m Dual Port FlexFabric 10Gb Converged Network Adapter
	Notes:
	  – BL8x0c i6 server blades require Virtual Connect 3.70 or later
	  – Each port supports 10GbE Ethernet or 8Gb FCoE traffic.
	  – Please see the QuickSpecs for Technical Specifications and additional information and for HP-UX support.
	  – HPE NC553m:
	    https://www.hpe.com/h20195/v2/GetHTML.aspx?docname=c04123265

InfiniBand Support	• Optional InfiniBand HCAs are supported by the HPE Integrity BL860c i6 Server Blade. The mezzanine circuit board connects directly to the server blade system board. • HPE 4X QDR InfiniBand ConnectX-2 Dual Port Mezzanine HCA for c-Class BladeSystem (PN 592519-B21)

Standard Features

InfiniBand Support	- Features: - Negotiates to DDR/QDR speeds - Dual ports for redundant path connections - Support for HP-UX 11i v3 - Supported with HPE 4X QDR InfiniBand Switch Module for c-Class BladeSystem (PN 489184-B21).

Fibre Channel Support
- Optional Fibre Channel HBAs are supported by the HPE Integrity BL890c i6. The mezzanine circuit board connects directly to the server blade system board.
- 8Gb Fibre Channel Host Bus Adapters:
  - QLogic QMH2562 8Gb Fibre Channel Host Bus Adapter for c-Class BladeSystem (PN B9F53A)
  - Emulex LPe1205 8Gb Fibre Channel Host Bus Adapter for c-Class BladeSystem (PN B9F54A)
- 8Gb Fibre Channel HBAs feature:
  - 8/4/2Gb/s auto negotiating speeds
  - Dual ports for redundant path connections
  - Optimized for HPE Storage and supported by third party SAN vendors
  - Support for HP-UX 11i v3, Microsoft® Windows for Integrity (6.2)

Compatible SAN   HPE Integrity BL890c i6 server blades are optimized for HPE Storage MSA, 3PAR, and XP7 products.

Smart Array Controller Support
- Optional Smart Array Controller is supported by BL890c i6. The mezzanine circuit board connects directly to the server blade system board, and provides connection to off-blade SAS storage via a SAS interconnect switch module in the HPE BladeSystem enclosure.
- HPE Smart Array P711m/1G FBWC 4-ports Ext PCIe x8 6G SAS Controller (PN B9F56A)
  - Provides support for HPE Zoned Storage for BladeSystem
  - Zoned Storage solution requires compatible HPE Storage 600 Modular Disk System and HPE Storage 3Gb SAS BL Switch
  - Supports RAID 6 with Advanced Data Guarding (ADG)
  - Provides support for HPE P2000 G3 MSA
  - Support for HPE P2000 G3 MSA requires HPE Storage 6Gb SAS BL Switch

Notes: For additional details please
see: **https://www.hpe.com/h20195/v2/GetHTML.aspx?docname=c04111558**

HP Monster 700 A-A 7ft USB Extension Cable
- External USB DVD drive with 6 ft USB extension cable is supported with c7000 enclosures.
- The solution includes the following components:
  - External USB DVD drive with 9-inch USB cable
  - Power adaptor, power cable and USB Y-connector
  - 6-foot USB extension cable

Notes:
- The USB Y-connector goes between the extension cable (SH046AA) and the 9-inch USB cable fixed with DVD drive.
- The Y-connector should NOT be placed between the server blade and the 6-foot Extension cable.

Standard Features

Integrity Server Blades Management Software and HPE Integrity Essentials Software Plug-ins

- HP-UX 11i Management Software for HPE Integrity BL890c i6 Server Blade and HPE BladeSystem
  - **Getting Started**
    - o HPE Systems Insight Manager
    - o HPE Insight Control for HP-UX 11i
    - o HP-UX 11i System Management
    - o HPE BladeSystem Integrated Manager in HPE System Insight Manager
    - o HPE Onboard Administrator
    - o HPE BladeSystem c-Class Onboard Administrator Firmware
    - o HPE BladeSystem c-Class Virtual Connect Firmware
    - o HPE Insight Control for HP-UX 11i v3 (included in BASE OE)
  - **Deploy**
    - o HPE Ignite-UX
    - o Software Distributor-UX
    - o Software Package Builder
    - o Dynamic Root Disk (DRD)
  - **Monitor**
    - o HPE Systems Insight Manager
    - o HPE System Management Homepage
    - o Glance Plus Pak
    - o Performance Manager and Agent
    - o HPE Serviceguard Manager
  - **Control**
    - o HPE Integrity Integrated Lights-Out (iLO) 3 (standard with BL890c i6 servers)
    - o Integrity iLO Advanced 3 Pack License (included with BL890c i6 servers
  - **Protect**
    - o HP-UX Bastille
    - o HPE Containers
    - o Data Protector Software
    - o Software Assistant (SWA)
  - **Optimize**
    - o HPE Capacity Advisory
    - o HPE Global Workload Manager
    - o Process Resource Manager
    - o HPE Insight Power Manager
    - o HP-UX 11i v3 power management
  - **Provision**
    - o HPE Matrix OE - Matrix OE infrastructure orchestration
  - **Integrate**
    - o HPE Business Technology Optimization
    - o IT Management Software
    - o HPE Matrix OE - Matrix OE for HPE Integrity server blade
  - **Learn More**
    - o For additional information on HPE Integrity server blade management software please visit:
      http://h20566.www2.hpe.com/hpsc/doc/public/display?sp4ts.oid=5330442&docLocale=en_US&docId=emr_na-c04014125

Standard Features

Glossary of Integrity Server Blades Management Software Product Description

HPE BladeSystem Integrated Manager in HPE Systems Insight Manager
The HPE BladeSystem Integrated Manager is a component in HPE Systems Insight Manager (SIM) that provides streamlined management for the entire HPE BladeSystem product family. The HPE BladeSystem Integrated Manager enables users to quickly navigate their HPE blade environments including blade servers, enclosure infrastructures, racks, and integrated switches, via automatically generated blade rack picture views and hierarchical trees. Users are able to conveniently configure, deploy, and manage individual or groups of blade systems. Additionally, users are able to quickly set up logical collections of blade systems for convenient management and control.

HPE Blades Visualization
Used by System Administrators to identify, associate and group blades into collections, using tables, trees, and picture views, and it can also be used to monitor performance and launch Integrity Essentials.
Notes: For more information about Manageability solutions for Integrity Servers go to: **https://www.hpe.com/us/en/software/servers-insight-control.html** .

HPE GlancePlus Pak
HPE GlancePlus Pak provides you with a single product for managing a system's availability and performance. It is an integrated product that includes HPE GlancePlus. As an integrated product, the GlancePlus Pak includes the real-time diagnostic capabilities of GlancePlus and the historical data collection capabilities of the Performance Agent. The performance agent is used with other availability and performance management products, thus providing an integrated real-time and historical performance management solution.

HPE Ignite-UX for HP-UX Deployments
HPE Ignite-UX is a free toolset that enables a network install of HP-UX onto multiple PA-RISC and/or Integrity servers on a network. It can also be used to create custom install configurations, or golden images, recover systems remotely, create custom recovery media including tape, CD and DVD, and manage and monitor multiple client installation sessions.

HPE Capacity Advisor
The capacity planning component of HPE Matrix OE - , HPE Capacity Advisor offers the industry's first lightweight, integrated tool for ongoing capacity planning by simulating the placement of application workloads to help IT administrators improve server utilization. It captures real-world server utilization data to pre-test different scenarios before making changes to critical applications. HPE Virtualization Manager, which is included with Capacity Advisor and Global Workload Manager, provides a central point of control that allows you to manage all the resources in your virtualized environment and a powerful way to connect IT resources to real business needs.

HPE Integrity Integrated Lights-Out (iLO) 3 (factory integrated with BL890c i2)
HPE Integrity Integrated Lights-Out (iLO) management processors make it simpler, faster, and less costly to remotely manage your Integrity servers. HPE iLO functions without additional software and can be accessed from any location via a web browser. HPE Integrity systems with iLO 3 ships with a built in Advanced Pack License so your Integrity blade is instantly ready to use iLO Virtual Media and iLO power measurement. Integrity iLO Advanced features enabled in this release: Virtual Media, LDAP directory services, nPartitions management, iLO power measurement, and integration with Insight Power Manager. No additional iLO licensing is needed.
Notes: Please see **https://www.hpe.com/h20195/v2/getpdf.aspx/c04154454.pdf** for more information

Standard Features

Glossary of Integrity Server Blades Management Software Product Description

HPE Onboard Administrator

The Onboard Administrator for the HPE BladeSystem enclosure is the brains of the c-Class infrastructure. Together with the enclosure's HPE Insight Display, the Onboard Administrator has been designed for both local and remote administration of HPE BladeSystem c-Class. This module and its firmware provides:

- Wizards for simple, fast setup and configuration
- Highly available and secure access to the HPE BladeSystem infrastructure
- Security roles for server, network, and storage administrators
- Automated power and cooling of the HPE BladeSystem infrastructure
- Agent-less device health and status
- Thermal Logic power and cooling information and control

Notes: Please see: **https://www.hpe.com/us/en/product-catalog/servers/bladesystem-enclosures/pip.hpe-onboard-administrator.3188465.html** for more information.

HPE Serviceguard Manager

HPE Serviceguard Manager (included with the Serviceguard product) is a graphical user interface (GUI) that provides configuration, administration, and monitoring capabilities for Serviceguard, Serviceguard Extension for Oracle RAC, Metrocluster, and Continentalclusters. Using Serviceguard Manager, operators see color-coded icons that provide a big-picture view of multiple clusters. From this big-picture view, operators can drill down and proactively manage clusters, systems (nodes), and packages that run applications.

HPE Systems Insight Manager

HPE Systems Insight Manager (HPE SIM) provides a unified, secure and extensible environment to centrally manage servers, storage and other infrastructure devices across multiple operating system platforms.

HPE System Management Homepage

HPE System Management Homepage is a web-based interface that consolidates and simplifies the management of individual ProLiant servers running Microsoft Windows or Linux operating systems, or HPE 9000 and HPE Integrity servers running **HP-UX 11i**. By aggregating data from HPE Insight Management Agents and other management tools, the System Management Homepage provides a secure and intuitive interface to review in-depth hardware configuration and status data, performance metrics, system thresholds and software version control information. The System Management Homepage can also be used to access the HPE Lights-Out Management processor on ProLiant and Integrity servers.

HPE Matrix OE for HPE Integrity servers

HPE Matrix OE is advanced lifecycle management software for HPE Integrity servers which enables you to instantly adjust to dynamic business demands - with the new addition of infrastructure orchestration, not only can you easily plan, configure, and automate your physical and virtual resources in the same way, but now you can also provision and modify a complex infrastructure in minutes.

HP-UX Software Assistant (SWA)

HP-UX Software Assistant (SWA) is a command-line based tool that consolidates and simplifies patch management and security bulletin management on HP-UX systems. The SWA tool is new for HP-UX releases as of January 2007, includes Security Patch Check (SPC), and is the HPE-recommended utility to use to maintain currency with HPE-published security bulletins for HP-UX software.

Standard Features

Glossary of Integrity Server Blades Management Software Product Description

HP-UX Workload Manager

HP-UX Workload Manager (HP-UX WLM) is a resource management tool that provides automatic processor resource allocation and application performance management based on your service-level objectives (SLOs) and business priorities. WLM is most effective managing applications that are processor-bound. It automatically adapts system or partition CPU resources (cores) to the demands, SLOs, and priorities of the running applications. (A core is the actual data processing engine within a processor, where a single processor can have multiple cores, and a core can support multiple execution threads through Hyper-Threading, introduced with HP-UX 11i v3, as discussed below.) It adjusts the CPU allocation of a group of processes known as a workload, basing adjustment on the current needs and performance of the applications in that workload.

HPE Global Workload Manager

The workload management capability for HPE Integrity servers is provided by the HPE Global Workload Manager component of HPE Insight Dynamics - VSE. HPE Global Workload Manager (gWLM) is an intelligent policy engine that automatically allocates resources among multiple workloads to increase server utilization while meeting service levels for high-priority applications. Designed to work across multiple HP-UX 11i, OpenVMS and Linux environments, the workload management features are ideal for large, centralized IT environments that host applications for many departments.

HPE Matrix OE

HPE Matrix OE capabilities let you provision infrastructure in minutes to automatically activate physical and virtual servers, storage, and networking from pools of shared resources. Whether you need a single virtual machine or infrastructure for a complex three-tier application, Matrix OE finds available resources, streamlines the approval process, and automatically provisions and configures what's needed across infrastructure silos. Delivering infrastructure to the business becomes faster, more efficient, and more reliable.

Performance Manager and Agent

HPE Performance Manager, Agents, and Monitor combine to provide a powerful and flexible distributed management solution. This solution is a single interface for centrally monitoring, analyzing, and forecasting resource utilization for distributed multi-vendor environments, enabling you to offer the best possible level of service in a cost-effective manner.

Process Resource Manager

HPE Process Resource Manager (HPE PRM) is a resource management tool used to control the amount of resources that processes use during peak system load. HPE PRM can manage allocation of the following resources:

- CPU: Ensures a minimum allocation of CPU; can also simultaneously cap CPU resource usage for each group in the configuration. (Starting with HP-UX 11i v3, per-group capping is available.)
- Memory: Ensures a minimum allocation of private real memory; can also cap private memory usage. Allows you to allocate an exact amount of shared memory.
- Disk bandwidth: Ensures a minimum allocation of disk bandwidth

Standard Features

Glossary of Integrity Server Blades Management Software Product Description

HPE Containers

One method that Matrix OE uses to improve server resource utilization is to consolidate multiple applications within a single operating system image. HP-UX Containers combine kernel level security and prove resource management to stack multiple applications within the same operating system. HP-UX Containers and HP-UX Workload Manager can dedicate specific resources to specific applications within an operating system image, avoiding resource contention issues. Using HP-UX Containers11i v3 Security Containment, organizations can ensure that application instances cannot access processes or file from other applications or the system. This ensures that multiple application instances run securely in a consolidated environment, providing the benefits of consolidation while preserving the security of a scale out environment. For software licensing purposes, the maximum number of CPUs in HP-UX Containers can be capped. This capability is part of the HP-UX Base Operating Environment (BOE).

Software Distributor-UX

Software Distributor (SD) is the HP-UX administration tool set used to deliver and maintain HP-UX operating systems and layered software applications. SD is delivered as part of HP-UX; you do not need to download it separately.

Insight Control for BladeSystem Management

Insight Control for BladeSystem delivers foundation management for HPE BladeSystem lifecycles, including hardware resource deployment, health monitoring, software version control, performance monitoring, and power management.

Integrity blades are supported with the following ICE components, installed automatically when using the wizard-based integrated installer:

- HPE Systems Insight Manager
- Extensions for SIM on Microsoft Windows CMS (to manage HP-UX)
- HPE BladeSystem Integrated Manager
- Insight Power Manager

Notes:

- For Licensing and Packaging Options please see the options section of this QuickSpecs.
- Insight Control Environment for BladeSystem is delivered with HPE BladeSystem c-Class enclosures with either 8 or16-server licenses, or 8 server evaluation licenses (30-days). For additional information on HPE BladeSystem c-Class Infrastructure please visit: HPE BladeSystem c-Class Infrastructure QuickSpecs at: **https://www.hpe.com/h20195/v2/GetHTML.aspx?docname=c04284202**
- For additional product and licensing information about Insight Control Environment, HPE Systems Insight Manager and Essentials software refer to: **https://www.hpe.com/us/en/software/servers-insight-control.html**.

OS Support

- HP-UX 11i v3 Data Center Operating Environment (DC-OE)
- HP-UX 11i v3 Virtual Server Environment (VSE-OE)
- HP-UX 11i v3 High Availability Environment (HA-OE)
- HP-UX 11i v3 Base Operating Environment (BOE)
- VSI OpenVMS V8.4-2L1

Notes: For complete and up to date information on HP-UX 11i support, please visit the HP-UX 11i website at: **http://www.hpe.com/info/hpux**

Standard Features

Supported Software Options

HPE Matrix OE for HPE Integrity servers (which is included in HP-UX VSE-OE and DC-OE) includes the following capabilities:
- HP-UX Virtual Partitions (vPars) v6.4
- HPE Integrity Virtual Machines (VM)
- HPE Capacity Advisor
- HPE Global Workload Manager
- HPE Integrity Online VM Migration
- HPE Virtualization Manager
- HPE Serviceguard for HP-UX 11i
- HPE Serviceguard Manager
- HPE Serviceguard Extensions for SAP
- HPE Serviceguard Extensions for Oracle
- HPE Insight Control power management
- GlancePlus Pak
- Performance Manager and Agent
- HA Monitors
- MirrorDisk/UX

Intelligent Manageability

- HPE Integrity Integrated Lights-Out (iLO 3) Remote Management

- Virtual serial console (Multiple, mirrored sessions, with previous context and console log buffer)
  - Virtual Media
  - Virtual Power Button Control
  - LDAP Directory Services
  - iLO 3 power management integration with Insight Power Manager

- Embedded system health and Integrity fault management Diagnostics and troubleshooting:
  - Virtual front panel
  - Log access to Integrity System Event Log
  - Forward Progress Log Blade power consumption reading
- Dedicated LAN Connectivity
- Automatic IP Configuration via DHCP/DNS/WINS browser
- Command Line and scripted access Industry Standard RC4, 128-bit Secure Sockets Layer (SSL) and Secure Shell (SSH) Security
- Directory Services Integration (LDAP)
- Support for 19 user accounts with customizable access privileges

Notes: iLO 3 Advanced Pack license is included with every BL890c i6 server blade.

Availability

Dual-Port Fibre Channel Mezzanine Card for redundant SAN connection
Eight hot-plug SAS hard drive bays and four (4) integrated RAID (HPE p410i) controllers on every server blade

Network adapter teaming (network fault tolerance, transmit load balancing, switch-assisted load balancing) supported on integrated LOMs and with add-in Mezzanine cards.
- ECC protected DDR3 memory
- Memory double chip spare to overcome two DRAM chip failures
- Dynamic Processor resilience and deallocation with HP-UX
- Journal file system with HP-UX*

Standard Features

Availability
- Auto reboot
- HPE Serviceguard for HP-UX*
- HPE Serviceguard Extension for RAC for HP-UX*
- HPE Serviceguard Extension for SAP for HP-UX*
- Serviceguard Manager for HP-UX Clusters*
- HPE Event Monitoring Service
- HA Monitors for HP-UX
- HA Toolkits for HP-UX
- HPE Mirrordisk/UX* (Included if purchase HP-UX 11i VSE, DC, or HA OEs)
- Extended Campus Cluster*, HPE Metrocluster*, and HPE Continentalclusters* for HPE UX
- HPE System Insight Manager (SIM) for proactive fault management
- HPE Serviceguard Storage Management Suites for HP-UX*

Notes: *Fee based software products

Security

Hardware Security
- Administrator's password
- Integrity iLO 3 access control- 19 customizable local user accounts with assignable rights for power, console, configuration, etc.
- OA and Integrity iLO 3 Directory Services Integration (LDAP)
- Integrity iLO 3 access via SSL encryption or SSH
- Integrity iLO 3 access methods via web, SSH, etc. can be disabled
- SSL encryption on web console
- Trusted Platform Module (TPM) option for secure cryptographic key storage, integrates with HP-UX security features

Platform security fundamentals
For the past 34 years Hewlett Packard Enterprise has been building one of the most trustworthy and secure UNIX operating systems on the market. Designed for the optimal protection against both external and internal threats. HP-UX 11i offers industry-leading breadth and depth of UNIX security features. Focused on comprehensive security integration aimed at proactively mitigating risk, reducing compliance cost and accelerating time to implementation, HP-UX security solutions significantly lower IT costs. This set of fully integrated and complementary features is designed to provide layered security with in-depth protection of all your enterprise assets by protecting all these aspects of data, systems, data and identity security. HP-UX independently validates its comprehensive security portfolio through Common Criteria security evaluations.

Protecting systems:
One critical factor in enterprise security is system minimization and hardening. HP-UX 11i offers a set of security features designed to address known and unknown vulnerabilities by running only the services that are needed, thus minimizing a potential point of attack. The following security features have built-in mechanisms not only to minimize and harden the system, but also to detect and react to attack in real time:
- Bastille system hardening
- Host Intrusion Detection System
- Secure Resource Partitions
- IPFilter - firewall technology
- Software Assistant (security bulletin currency)
- Install-time Security

Standard Features

Security
- Boot Authentication
- Standard Mode Security Extensions
- Shadow Passwords
- Strong Random Number Generator

Protecting data:
HP-UX 11i offers data protection in many forms: protecting data in transit, in use and at rest. By using security features designed to protect data in its three forms, HP-UX 11i customers can minimize possible breaches not only in terms of data loss, but in customer trust as well. Several security features offer data protection capabilities to HP-UX customers:
- Encrypted volume and file system
- Trusted Computing Services
- Security containment
- OpenSSL
- IPSec
- Secure Shell
- MD5sum

Protecting Identity:
In modern day global enterprise companies, managing identity is not an easy task , especially as identity management requirements grow to include employees, contractors, partners and suppliers across many countries with various privacy protection laws and regulation. HP-UX 11i dramatically simplifies this critical task by integrating various identity management technologies which offer ease of use and adherence to compliance regulation:
- Identity Management Integration
- Select Access for IdMI
- Role-based Access Control
- AAA Server
- HPE Directory Server for HP-UX
- LDAP-UX Client
- Kerberos Server
- Kerberos Client Services
- PAM Kerberos

Notes: Hewlett Packard Enterprise also offers many additional security features available through open source software for HP-UX.

Common Criteria certification
Many enterprise and government customers require this vendor-independent security certification because it increases confidence in the product's security assurance, functionality, quality and effectiveness. Many governments, including the United States, require certification for government IT procurement.

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Standard Features

Security

Certification evaluations are only conducted by the evaluation agency after release of the product. HP-UX 11i v3 has been actively evaluated to the Common Criteria (CC) Security standards for many years. A history of our achievements include:

- February 2003: Certification of HP-UX 11i V1 achieves A CC to Evaluation Assurance Level 4
- May 2006: Certification of HP-UX 11i V2 to the current EAL4 Common Criteria
- May 2008: Certification of HP-UX 11iV3 achieved including hard partitions (nPars)
- December 2009: Certification of HP-UX 11iV3 to CCOPP profile including soft partitions (vPars)

Common Criteria certifications continue to be an integral part of our HP-UX comprehensive security portfolio. HP-UX 11i v3 has successfully completed a new Commercial off the Shelf (COTS) Compartmentalized Operations Protection Profile (CCOPP) evaluation. This new CCOPP evaluation encompasses the extensive range of security solution for HP-UX 11i v3 including soft partitioning or Virtual partitions (vPars) as well as the previously certified hard partitions (nPars)

HPE Simple Configurator

SCE is a guided self-service tool to help sales and non-technical people provide customers with initial configurations in 3 to 5 minutes. You may then send the configuration on for configuration help, or use in your existing ordering processes. If you require "custom" rack configuration or configuration for products not available in SCE, please contact HPE's Customer Business Center or an Authorized Partner for assistance. **https://h22174.www2.hpe.com/SimplifiedConfig/Welcome**

Service and Support

HPE Pointnext - Service and Support
Get the most from your HPE Products. Get the expertise you need at every step of your IT journey with **HPE Pointnext Services**. We help you lower your risks and overall costs using automation and methodologies that have been tested and refined by HPE experts through thousands of deployments globally. HPE Pointnext **Advisory Services**, focus on your business outcomes and goals, partnering with you to design your transformation and build a roadmap tuned to your unique challenges. Our **Professional** and **Operational Services** can be leveraged to speed up time-to-production, boost performance and accelerate your business. HPE Pointnext specializes in flawless and on-time implementation, on-budget execution, and creative configurations that get the most out of software and hardware alike.

Consume IT on your terms
HPE GreenLake brings the cloud experience directly to your apps and data wherever they are—the edge, colocations, or your data center. It delivers cloud services for on-premises IT infrastructure specifically tailored to your most demanding workloads. With a pay-per-use, scalable, point-and-click self-service experience that is managed for you, HPE GreenLake accelerates digital transformation in a distributed, edge-to-cloud world..
- Get faster time to market
- Save on TCO, align costs to business
- Scale quickly, meet unpredictable demand
- Simplify IT operations across your data centers and clouds

Managed services to run your IT operations
HPE GreenLake Management Services provides services that monitor, operate, and optimize your infrastructure and applications, delivered consistently and globally to give you unified control and let you focus on innovation.

Free up resources with Operational Services from HPE Pointnext Services
HPE delivers services for IT by using proven best practices as well as automation and methodologies that have been tested and refined by HPE experts and artificial intelligence through thousands of deployments globally. Choose from the recommended services for customers purchasing from Hewlett Packard Enterprise or an authorized reseller. Services are quoted using Hewlett Packard Enterprise order configuration tools.

HPE Pointnext Tech Care
HPE Pointnext Tech Care is the new operational service experience for HPE products. Tech Care goes beyond traditional support by providing access to product specific experts, an AI driven digital experience, and general technical guidance to not only reduce risk but constantly search for ways to do things better. HPE Pointnext Tech Care has been reimagined from the ground up to support a customer-centric, AI driven, and digitally enabled customer experience to move your business forward. HPE Pointnext Tech Care is available in three response levels. Basic, which provides 9x5 business hour availability and a 2 hour response time. Essential which provides a 15 minute response time 24x7 for most enterprise level customers, and Critical which includes a 6 hour repair commitment where available and outage management response for severity 1 incidents.

https://www.hpe.com/services/techcare

HPE Pointnext Complete Care
HPE Pointnext Complete Care is a modular, edge-to-cloud IT environment service that provides a holistic approach to optimizing your entire IT environment and achieving agreed upon IT outcomes and business goals through a personalized and customer-centric experience. All delivered by an assigned team of HPE Pointnext Services experts. HPE Pointnext Complete Care provides:
- A complete coverage approach -- edge to cloud
- An assigned HPE team
- Modular and fully personalized engagement
- Enhanced Incident Management experience with priority access
- Digitally enabled and AI driven customer experience

https://www.hpe.com/services/completecare

Service and Support

HPE Technology Services for Integrity Servers
HPE Technology Services delivers confidence, reduces risk and helps customers realize agility and stability. Connect to HPE to help prevent problems and solve issues faster. Our support technology lets you to tap into the knowledge of millions of devices and thousands of experts to stay informed and in control, anywhere, any time.

HPE ProLiant Server Hardware Installation
Provides for the basic hardware installation of Hewlett Packard Enterprise branded servers, storage devices and networking options to assist you in bringing your new hardware into operation in a timely and professional manner.

Factory Express for Servers and storage
HPE Factory Express offers configuration, customization, integration and deployment services for Hewlett Packard Enterprise servers and storage products. Customers can choose how their factory solutions are built, tested, integrated, shipped and deployed. For more information on Factory Express services for your specific server model please contact your sales representative or go to: **https://www.hpe.com/us/en/services/factory-express.html .**

Data Privacy Services
Protect your data through better media management. HPE Data privacy services help manage and protect sensitive data to reduce the risk of unauthorized access to private information and help meet compliance requirements. Our retention services allow you to keep drives and other devices upon failure, our removal services provide convenient data sanitization and our recovery services allow you to safely retire IT assets and capture any remaining value from the hardware. **https://www.hpe.com/us/en/services/consulting/security.html**. Additional HPE Pointnext operational services can be found at: **http://www.hpe.com/info/cpc**

eSupport

HPE Support Center
Personalized online support portal with access to information, tools and experts to support Hewlett Packard Enterprise business products. Submit support cases online, chat with HPE experts, access support resources or collaborate with peers. Learn more **http://www.hpe.com/info/support**

The HPE Support Center Mobile App* allows you to resolve issues yourself or quickly connect to an agent for live support. Now, you can get access to personalized IT support anywhere, anytime.

HPE Insight Remote Support and HPE Support Center are available at no additional cost with a HPE warranty, HPE Pointnext operational or Hewlett Packard Enterprise contractual support agreement.
Notes: *The Hewlett Packard Enterprise Support Center Mobile App is subject to local availability

Parts and Materials
Hewlett Packard Enterprise will provide HPE-supported replacement parts and materials necessary to maintain the covered hardware product in operating condition, including parts and materials for available and recommended engineering improvements.

Parts and components that have reached their maximum supported lifetime and/or the maximum usage limitations as set forth in the manufacturer's operating manual, product quick-specs, or the technical product data sheet will not be provided, repaired, or replaced as part of these services.

Defective Media Retention
An option available with HPE Pointnext Complete Care and HPE Pointnext Tech Care and applies only to Disk or eligible SSD/Flash Drives replaced by HPE due to malfunction.

Service and Support

For more information
- **www.hpe.com/services**
- **https://www.hpe.com/us/en/services/operational.html**

To learn more on HPE Storage Services, please contact your Hewlett Packard Enterprise sales representative or Hewlett Packard Enterprise Authorized Channel Partner. Contact information for a representative in your area can be found at "Contact HPE"
https://www.hpe.com/us/en/contact-hpe.html

HPE Support Services are sold by HPE and Hewlett Packard Enterprise Authorized Service Partners:
- Services for customers purchasing from HPE or an enterprise reseller are quoted using HPE order configuration tools.
- Customers purchasing from a commercial reseller can find HPE Support Services at
  https://ssc.hpe.com/portal/site/ssc/

Configuration Information

Step 1: Choose Required Base Server Blade Configuration

HPE Models

HPE Integrity BL890c c7000 Server Blade   AM380A

Notes:
- Choose the base models.
- Adding Option code "#0D1" to the Server Blade P/N will integrate the configured blade into the enclosure (which must be on the same order)
- When adding Option code "#0D1," must select whether server blade should be installed in an odd slot of the c7000 enclosure (AM380A#001) or in an even slot (AM380A#002).

HPE Integrity BL890c c3000 Server Blade   AM381A

Notes:
- Choose the base models.
- Adding Option code "#0D1" to the Server Blade P/N will integrate the configured blade into the enclosure (which must be on the same order)
- When adding Option code "#0D1," must select whether server blade should be installed in an odd slot of the c3000 enclosure (AM381A#001) or in an even slot (AM381A#002).

Base unit standard features:

- Sixteen embedded 10 Gigabit Ethernet NIC ports plus (1) additional 10/100 NIC dedicated to Integrity iLO 3iLO 3 Management
- Four Integrated HPE Smart Array p410i SAS Controller for internal HDDs
- Eight small form factor (SFF) SAS hot plug hard drive bays
- HPE Integrity Integrated Lights-Out 3

Step 2: Choose Required Options (one of the following from each list unless otherwise noted)

HPE Processors

Notes: Select minimum four (4) and maximum eight (8) processors.

Octo-Core Processors

Intel Itanium 9740 (2.13GHz/8-core/24MB/170W) Processor Kit for HPE Integrity BL8x0c i6   AM383B
Intel Itanium 9760 (2.67GHz/8-core/32MB/170W) Processor Kit for HPE Integrity BL8x0c i6   AM382B

Quad-Core Processor

Intel Itanium 9720 (1.73GHz/4-core/20MB/130W) Processor Kit for HPE Integrity BL8x0c i6   AM385B
Intel Itanium 9750 (2.53GHz/4-core/32MB/170W) Processor Kit for HPE Integrity BL8x0c i6   AM384B

Configuration Information

HPE Memory

Notes: Select minimum four (4) and maximum forty eight (48) memory kits.

HPE BL8x0c 32GB (2x16GB) Dual Rank PC3L-12800 (DDR3-1600) Registered CAS-11 Memory Kit	AM388A

Notes:
— Memory kits consist of two individual DIMMs.
— DIMMs must be installed in quads. Therefore, memory kits must be ordered two (2) at a time, to reach quads (4 DIMMS) to be installed.

Step 3: Choose Additional Options for Factory Integration

HPE Hard Drives

Notes: Hard drives have either a one year or three year warranty; refer to the specific hard drive QuickSpecs for details.

SAS Hot Plug SFF (2.5-inch) Enterprise (ENT) Drives

HPE Integrity 600GB SAS 12G Enterprise 15K SFF (2.5in) ST 3yr Wty Digitally Signed Firmware HDD	B9F32B
HPE Integrity 1.2TB SAS 12G Enterprise 10K SFF (2.5in) ST 3yr Wty Digitally Signed Firmware HDD	B9F36B

Notes: Though the disks are 6Gb/12Gb, implementation of the embedded HPE Smart Array SAS RAID controller limits performance of disks.

12G SAS Hot Plug Enterprise Performance Solid State Drives

Notes: BL890c i6 supports HPE Virtual Connect Fibre Channel Interconnect Modules.

HPE Security - TPM

Notes: The TPM must be installed by the factory.

Step 4: Choose Additional Options for Field Upgrades

Notes:
— For additional options, please refer to the "Core Options" and "Additional Options" section below. For additional options, including server blade enclosures interconnect, mezzanine options and power subsystem options; please see the Core Options and Additional sections below; or the following:
  — HPE BladeSystem c-Class Enclosures QuickSpecs:
  — HPE BladeSystem c3000 Enclosure QuickSpecs:
    https://h20195.www2.hpe.com/v2/GetDocument.aspx?docname=c04123379
  — HPE BladeSystem c7000 Enclosure QuickSpecs:
    https://h20195.www2.hpe.com/v2/GetDocument.aspx?docname=c04229580
  — HPE BladeSystem c-Class Interconnect and Mezzanine Components:
    https://www.hpe.com/us/en/product-catalog/servers/server-interconnects.hits-12.html
    https://www.hpe.com/us/en/product-catalog/servers/server-adapters.hits-12.html
  — HPE Virtual Connect
    https://www.hpe.com/us/en/integrated-systems/virtual-connect.html
  — HPE Server Interconnects
    https://www.hpe.com/us/en/product-catalog/servers/server-interconnects.hits-12.html
  — HPE Server Adapters
    https://www.hpe.com/us/en/product-catalog/servers/server-adapters.hits-12.html

Additional Options

HPE Integrity Upgrade Kits

HPE Integrity BL8x0c i4/i6 Upgrade Blade   AM394A

Notes: At least one (1) processor must be purchased with each upgrade blade; other components may also be ordered. All processors in the upgraded server blade must be of the same type.

Notes: Required for BL870c i6 server blade used in odd slot of c7000 or c3000.

HPE Integrity BL8x0c i6 Upgrade BL4 Blade Link   Q8A00A

Notes: Required for BL890c i6 server blade used in c7000.

HPE Ethernet Interconnects

Notes: Please see the QuickSpecs for Technical Specifications and additional information: **https://www.hpe.com/h20195/v2/GetHTML.aspx?docname=c04154400**

HPE USB Options

Notes:

- The HPE Integrity USB External DVD-RW drive solution includes the External DVD drive (AT120B) with 9 inch USB cable, power adaptor, power cable and Y-connector and 6-foot USB extension cable.
- The USB Y-connector goes between the extension cable (SH046AA) and the 9-inch USB cable fixed with DVD drive.
- The Y-connector should NOT be placed between the server blade and the 6-foot Extension cable.

HPE Pointnext operational services

Notes: Hewlett Packard Enterprise offers a range of support services and additional services. For a complete listing of services, see: HPE.com external site: **http://www.hpe.com/info/support**

HPE Critical Service

HPE 1Y Critical SVC   HA112A1
HPE 3Y Critical SVC   HA112A3

Installation Services

HPE Installation SVC   HA113A1

Notes: For more information: **http://www.hpe.com/info/support**.

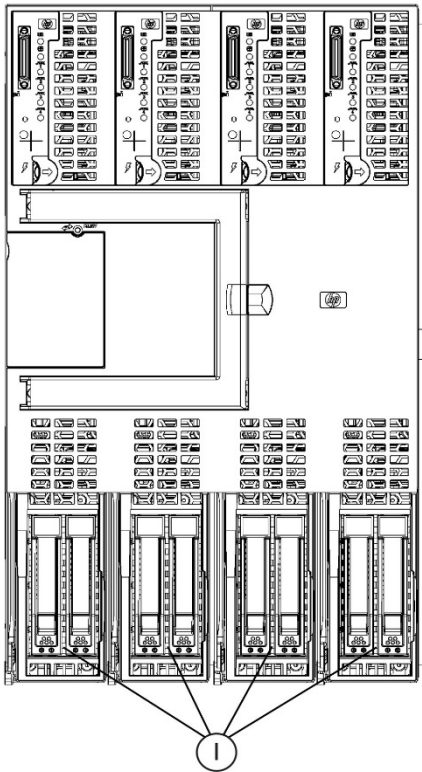## Memory

DIMM installation guidelines:
1. All DIMMs must be DDR3 registered memory modules (R-DIMMs)
2. All four DIMM slots in a memory bank must be populated. For each CPU, the memory blanks are designated as follows: first bank consists of pairs A and B, second bank consists of pairs C and D and the third bank consists of pairs E and F.
3. Banks must be populated in sequential Alphabetic order, starting with bank A and B for CPU0, followed by banks A and B for CPU1, etc.
4. All four DIMMs in a memory bank must be identical. Install identical DIMMs in quads, starting with DIMM pairs A and B CPU0.
5. DIMMs must be installed in decreasing capacity with the largest DIMMs installed in the smallest numbered DIMM slot.

HPE Integrity BL890c i6 Server Blade

- **Standard Memory**
  - 32 GB - HPE BL8x0c 32GB (4 x 8GB DIMMs)
  - Memory Bus Bandwidth: 6.4GT/s

- **Standard Memory Plus Optional Memory**
  - Up to 1.5 TB of DDR3 registered (R-DIMMs) memory is available.

Storage

1.   8 x SFF SAS Hot Plug Hard Drives

Hard Drives
Notes: Hard drives have either a one year or three year warranty; refer to the specific hard drive QuickSpecs for details.

SAS Hot Plug SFF (2.5-inch) Enterprise (ENT) Drives

	Quantity Supported	Position Supported	Controller
1.2TB 12G 10K SFF 600GB 12G 10K SFF 300GB 12G 10K SFF 300GB 12G 15K SFF 600GB 12G 15K SFF 900GB 12G 15K SFF	8	1-8	HPE Smart Array p410i Controller

12G SAS Hot Plug Enterprise Performance Solid State Drives

	Quantity Supported	Position Supported	Controller
400GB/800GB 12G SAS SLC	8	1-8	HPE Smart Array p410i Controller

Technical Specifications

Power Specifications

Notes: The HPE Power Advisor is a tool provided by Hewlett Packard Enterprise to assist in the estimation of power consumption and proper selection of components including power supplies at a system, rack, and multi-rack level. A variety of additional features are also provided including a condensed bill of materials, a cost of owner ship calculator, and a power report. For additional information please visit: HPE Power Advisor: **https://www.hpe.com/in/en/integrated-systems/rack-power-cooling.html**

System Unit			
	Dimensions	Height	14.42 in (36.63 cm)
		Depth	19.10 in (48.51 cm)
		Width	8.29 in (20.82 cm)
	Shipping Dimensions	Height	20.50 in (54.61 cm)
		Depth	26.00 in (66.04 cm)
		Width	15.94 in (40.49 cm)
	Weight	Maximum	106lbs. (48.08 kg)
	Temperature Range*	Operating	10° to 35° C (50° to 95° F)
		Non-Operating	-40° to 60° C (-40° to 140° F)
		Storage	-20° to 60° C (-4° to 140° F)
		Maximum Wet Bulb Temperature	30° C (86° F)
	Relative Humidity* *	Operating	15% to 80%
		Shipping	10% to 90%
		Storage	10% to 90%

Notes:

- *All temperature ratings shown are for sea level. An altitude derating of 1°C per 304.8 m (1.8°F per 1,000 ft) to 3048 m (10,000 ft) is applicable. No direct sunlight allowed. Upper operating limit is 3,048m (10,000 ft) or 70 Kpa/10.1 psia. Upper non-operating limit is 9,144 m (30,000 ft) or 30.3 KPa/4.4 psia.
- **Storage maximum humidity of 90% is based on a maximum temperature of 45°C (113°F). Altitude maximum for storage corresponds to a pressure minimum of 70 KPa.

SAS RAID HPE p410e Controller		
	Disk Drive and Enclosure Interface	3Gb SAS (Serial Attached SCSI)
	SAS Connectors	8 internal (SFF8484) x4 wide port connector
	Cache Memory Speed	DDR2-800 memory provides up to 4.2 GB/s maximum bandwidth
	Server Interface	X1 5.0Gbps PCIe provides 1GB/s maximum bandwidth
	SAS Speed	Eight x 1 3G SAS provides 2400MB/s maximum bandwidth
	Cache Memory	Four (4) integrated SAS read only 512MB cache, one per HPE Smart Array p410i SAS controller
	Logical Drives Supported	Up to 32 logical volumes
	Maximum Logical Drive Capacity	Up to 64 logical
	Host Memory Addressing	64-bit, supporting greater than 4GB server memory space

Technical Specifications

SAS RAID HPE p410e Controller	**RAID Support**	RAID 0 (striping) and 1 (Mirroring), and RAID 0+1 (mirrored and striped) (not supported with BL8x0c i6 blades)
	Upgradeable Firmware	Upgradeable Firmware with Recovery ROM features Online Drive Flash requires 256MB, 512MB, or 1GB cache module
Embedded Dual NC553i 10Gb 2-port FlexFabric NICs with Flex-10 support	**Network Interface**	10000Base-Sx
	Compatibility	IEEE 802.3ib QoS 802.3x flow control, and 802.3ap 10GBase-KR
	Data Transfer Method	PCI Express, four lanes (x4)
	Network Transfer Rate (Theoretical Maximum Values)	1 Dual 10Gb ports offer up to 40Gb/s bidirectional theoretical throughput
Environment-friendly Products and Approach	**End-of-life Management and Recycling**	Hewlett Packard Enterprise offers end-of-life Hewlett Packard Enterprise product return, trade-in, and recycling programs in many geographic areas. For trade-in information, please go to: **http://www.hpe.com/info/recycle**. To recycle your product, please go to: **http://www.hpe.com/info/recycle** or contact your nearest Hewlett Packard Enterprise sales office. Products returned to Hewlett Packard Enterprise will be recycled, recovered or disposed of in a responsible manner. The EU WEEE directive (2002/95/EC) requires manufacturers to provide treatment information for each product type for use by treatment facilities. This information (product disassembly instructions) is posted on the Hewlett Packard Enterprise web site at: **http://www.hpe.com/info/recycle**. These instructions may be used by recyclers and other WEEE treatment facilities as well as HPE OEM customers who integrate and re-sell Hewlett Packard Enterprise equipment.
Regulatory Compliance	**Regulatory Model Number**	RSVLA-BC11
	Electromagnetic Interference	Complies with FCC Rules and Regulations, Part 15, as a Class A digital device. Manufacturer's Declaration to EN55022 Class A, VCCI Registered, Class A, KC (Korea Certification), BMSI Taiwan, CSA Certified, compliant with IEC 60950, UL 60950, EN 60950 and EN41003
	Safety	UL Listed, CSA Certified, TUV GS Mark compliant with EN 60950 and EN 41003
	More detailed regulatory documents and certifications	**https://www.hpe.com/us/en/about/environment/msds-specs-more.html**

Summary of Changes

Date	Version History	Action	Description of Change
15-Nov-2021	Version10	Changed	Service and Support Pointnext Tech Care and Complete Care information updated
02-Dec-2019	Version9	Changed	Overview and Configuration Information sections were updated.
03-Dec-2018	Version 8	Changed	Overview, Standard Features, and Ordering and Configuration sections were updated.
		Added	SKUs added in Ordering and Configuration section: P04558-B21, P04562-B21
01-Oct-2018	Version 7	Changed	Configuration Information – Factory Integrated Models, Additional Options and Memory were updated.
04-Sep-2018	Version 6	Changed	QuickSpecs Updated.
08-Jan-2018	Version 5	Changed	Configuration Information - Factory Integrated Models and Storage sections were updated.
		Added	SKUs added in Configuration Information - Factory Integrated Models section: B9F30B, B9F32B, Q2C47A, B9F33B, B9F34B, B9F36B.
		Removed	SKUs removed in Configuration Information - Factory Integrated Models section: 872842-B21, 872848-B21, 872846-B21, 873008-B21, 873010-B21, 873012-B21
23-Oct-2017	Version 4	Changed	Care Pack naming and Service and Support- Parts and Materials updated.
25-Sep-2017	Version 3	Changed	Configuration Information - Factory Integrated Models, Core Options, and Memory sections were updated.
		Added	SKUs added in Configuration Information - Factory Integrated Models and Core Options sections: 873349-B21, 873460-H21, Q7Z99A, Q8A00A.
		Removed	SKUs removed in Configuration Information - Factory Integrated Models and Core Options sections: 802576-B21, 802580-B21, 802584-B21, AM395A, AM398A.
11-Jul-2017	Version 2	Changed	Standard Features, Configuration Information - Factory Integrated Models, Memory, and Storage sections were updated.
		Removed	SKUs were removed: 785079-B21, 785075-B21, 785073-B21, 785099-B21, 785101-B21, 785103-B21, 785071-B21, 512547-B21.
05-Jun-2017	Version 1	Created	New QuickSpecs.

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